AMENDMENTS TO THE CLAIMS

1. (Previously Presented) An optical reader comprising:

a printed circuit board;

a image sensor mounted on said printed circuit board, said image sensor having a field of view, said image sensor adapted to generate an electrical signal representative of the field of view of said image sensor;

a signal processing circuit disposed to receive said electrical signal from said image sensor, said signal processing circuit mounted on said printed circuit board;

an image capture circuit adapted to receive the electrical signal from said signal processing circuit and store said electrical signal, said image capture circuit mounted on said printed circuit board;

an image decoding and/or recognition circuit coupled to said image capture circuit, said image decoding and/or recognition circuit mounted on said printed circuit board;

at least one light source mounted on said printed circuit board, said at least one light source disposed to illuminate at least a portion of the field of view of said image sensor; and

a control circuit coupled to said image sensor,

wherein said control circuit is adapted to control the operation of said image sensor.

2. (Previously Presented) The optical reader of claim 1, wherein said at least one light source is configured to project a single aiming line.

3. (Previously Presented) An optical reader comprising:

a mounting frame, said mounting frame including:

a back plate; and

four sidewalls extending outwards from said back plate;

wherein said back plate and said four side walls define an interior volume; and

wherein said back plate defines a plurality of openings;

a printed circuit board coupled to said back plate, wherein said printed circuit board is external to said interior volume;

an image sensor mounted on said printed circuit board, said image sensor disposed such that the field of view of said image sensor faces said interior volume;

at least one light source disposed within said interior volume, said at least one light source mounted on said printed circuit board;

a control circuit for controlling the operation of said image sensor and said control circuit disposed on said printed circuit board, said control circuit coupled to said image sensor;

a signal processing circuit disposed to receive an electrical signal from said image sensor, said signal processing circuit mounted on said printed circuit board;

an image capture circuit adapted to receive the electrical signal from said signal processing circuit and store said electrical signal, said image capture circuit mounted on said printed circuit board; and

an image decoding and/or recognition circuit coupled to said image capture circuit, said image decoding and/or recognition circuit mounted on said printed circuit board.

4. (Previously Presented) The optical reader of claim 3, further including a receive optics lens assembly coupled to said back plate.

5. (Previously Presented) The optical reader of claim 4, further including:

a diffuser plate engageable with at least two of said four side walls; and

a aiming lens aperture plate disposed between said diffuser plate and said back plate.

6. (Previously Presented) The optical reader of claim 5, wherein said at least one light source includes a plurality of light sources.

7. (Previously Presented) The optical reader of claim 6, wherein said plurality of light sources includes a plurality of light emitting diodes.

8. (Previously Presented) The optical reader of claim 6, wherein said image sensor is a solid state image sensor and said back plate defines a recess for receiving said solid state image sensor.

9. (Previously Presented) The optical reader of claim 6, wherein at least one of said at least two of said at least four sidewalls includes a resilient finger engageable with said diffuser plate.

10. (Previously Presented) An optical reader comprising:

a mounting frame, said mounting frame including:

a back plate; and

four sidewalls extending outwards from said back plate;

wherein said back plate and said four side walls define an interior volume; and

wherein said back plate defines a plurality of openings;

a printed circuit board coupled to said back plate, wherein said printed circuit board is external to said interior volume;

an image sensor mounted on said printed circuit board, said image sensor disposed such that the field of view of said image sensor faces said interior volume;

at least one light source provided by a plurality of light emitting diodes disposed within said interior volume, said plurality of light emitting diodes mounted on said printed circuit board;

a control circuit for controlling the operation of said image sensor, said control circuit disposed on said printed circuit board, said control circuit coupled to said image sensor;

a signal processing circuit disposed to receive an electrical signal from said image sensor, said signal processing circuit mounted on said printed circuit board;

an image capture circuit adapted to receive the electrical signal from said signal processing circuit and store said electrical signal, said image capture circuit mounted on said printed circuit board; and

an image decoding and/or recognition circuit coupled to said image capture circuit, said image decoding and/or recognition circuit mounted on said printed circuit board.

11. (Previously Presented) The optical reader of claim 10, further including a receive optics lens assembly coupled to said back plate.

12. (Currently Amended) The optical reader of claim 11, further including:

a diffuser plate engageable with at least two of said four side walls; and

[[a]] [[an]] aiming lens aperture plate disposed between said diffuser plate and said back plate.

13. (Previously Presented) The optical reader of claim 12, wherein said image sensor is a solid state image sensor and said back plate defines a recess for receiving said solid state image sensor.

14. (Previously Presented) The optical reader of claim 12, wherein at least one of said at least two of said at least four sidewalls includes a resilient finger engageable with said diffuser plate.

15. (Previously Presented) An optical reader comprising:

a mounting frame, said mounting frame including:

a back plate; and

four sidewalls extending outwards from said back plate;

wherein said back plate and said four side walls define an interior volume; and

wherein said back plate defines a plurality of openings;

a printed circuit board coupled to said back plate, wherein said printed circuit board is external to said interior volume;

an image sensor mounted on said printed circuit board, said image sensor disposed such that the field of view of said image sensor faces said interior volume;

a plurality of light emitting diodes disposed within said interior volume, said plurality of light emitting diodes mounted on said printed circuit board;

a control circuit for controlling the operation of said image sensor, said control circuit disposed on said printed circuit board, said control circuit coupled to said image sensor;

a signal processing circuit disposed to receive an electrical signal from said image sensor, said signal processing circuit mounted on said printed circuit board;

an image capture circuit adapted to receive the electrical signal from said signal processing circuit and store said electrical signal, said image capture circuit mounted on said printed circuit board; and

an image decoding and/or recognition circuit coupled to said image capture circuit, said image decoding and/or recognition circuit mounted on said printed circuit board;

wherein the receive axis of said image sensor is substantially perpendicular to said printed circuit board.

16. (Previously Presented) The optical reader of claim 15, further including an aperture plate disposed proximate to said plurality of light emitting diodes, wherein said aperture plate defines a plurality of openings, wherein said plurality of openings are disposed such that at least a portion of the light emitted by said plurality of light emitting diodes is directed through said plurality of apertures.

17. (Previously Presented) The optical reader of claim 16, further comprising a diffuser plate disposed to receive at least a portion of the light emitted from said plurality of light emitting diodes.

18. (Previously Presented) The optical reader of claim 15, further including a diffuser plate coupled to said mounting frame, wherein said diffuser plate is disposed to receive at least a portion of the light emitted by said plurality of light emitting diodes.

19. (Previously Presented) The optical reader of claim 18, further including an aperture plate disposed between said diffuser plate and said plurality of light emitting diodes, wherein said aperture plate restricts the amount of light reaching said diffuser plate from said plurality of light emitting diodes.

20. (Previously Presented) The optical reader of claim 19, wherein said aperture plate defines a plurality of openings and at least a portion of said plurality of openings are aligned with at least a portion of said plurality of light emitting diodes.

21. (Previously Presented) The optical reader of claim 20, wherein said plurality of light emitting diodes includes:

at least one illumination light emitting diode; and

at least one aiming light emitting diode.

22. (Previously Presented) The optical reader of claim 21, wherein said at least one aiming light emitting diode and said aperture plate are adapted to generate a horizontal aiming pattern.

23. (Previously Presented) The optical reader of claim 22, wherein said horizontal aiming pattern includes a horizontal line of light.

24. (Previously Presented) The optical reader of claim 22, wherein said horizontal aiming pattern consists of a horizontal line of light.

25. (Previously Presented) The optical reader of claim 20, wherein said plurality of light emitting diodes includes:

a plurality of illumination light emitting diodes; and

a plurality of aiming light emitting diodes.

26. (Previously Presented) An optical reader comprising:

a mounting frame, said mounting frame including:

a back plate; and

four sidewalls extending outwards from said back plate;

wherein said back plate and said four side walls define an interior volume;

wherein said back plate includes an exterior surface and

wherein said back plate defines a plurality of openings;

a printed circuit board coupled to said external surface;

an image sensor mounted on said printed circuit board, said image sensor disposed such that the field of view of said image sensor faces said interior volume;

at least one light source provided by a plurality of light emitting diodes disposed within said interior volume, said plurality of light emitting diodes mounted on said printed circuit board;

illumination optics disposed proximate to said plurality of light emitting diodes;

a control circuit for controlling the operation of said image sensor, said control circuit disposed on said printed circuit board, said control circuit coupled to said image sensor;

a signal processing circuit disposed to receive an electrical signal from said image sensor, said signal processing circuit mounted on said printed circuit board;

an image capture circuit adapted to receive the electrical signal from said signal processing circuit and store said electrical signal, said image capture circuit mounted on said printed circuit board; and

an image decoding and/or recognition circuit coupled to said image capture circuit, said image decoding and/or recognition circuit mounted on said printed circuit board;

wherein the receive axis of said image sensor is substantially perpendicular to said printed circuit board.

27. (Original) The optical reader of claim 26, wherein said exterior surface defines a receptacle for receiving said image sensor.

28. (Original) The optical reader of claim 27, wherein said image sensor includes a lens assembly.

29. (Currently Amended) The optical reader of claim 28, wherein at least [[~~on~~]] [[one]] of said plurality of openings defined by said back plate is disposed to receive said lens assembly.

30. (Previously Presented) The optical reader of claim 29, wherein at least a portion of said lens assembly is disposed within said interior volume.

31. (Previously Presented) The optical reader of claim 30, wherein each of said plurality of light emitting diodes includes a plurality of electrical leads.

32. (Previously Presented) The optical reader of claim 31, wherein the light emitting portion of each of said plurality of light emitting diodes is disposed within said interior volume; and wherein said plurality of electrical leads for each of said plurality of light emitting diodes extend from said interior volume through at least a portion of said

plurality of openings defined by said back plate thereby allowing each of said plurality of electrical leads to be coupled to a respective electrical contact disposed on said printed circuit board.

33. (Previously Presented) The optical reader of claim 26, wherein said illumination optics include:

an aperture plate; and

a diffuser plate;

wherein said aperture plate includes a plurality of arcuate surfaces;

wherein each of said arcuate surfaces includes a surface having compound curvature; and

wherein each of said arcuate surfaces defines a substantially rectangular aperture.

34. (Previously Presented) The optical reader of claim 33, wherein at least two of said four side walls include resilient members adapted for coupling said diffuser plate to said mounting frame.

35. (Currently Amended) An optical reader comprising:

a mounting frame having an external surface, said mounting frame including:

a back plate; and

four sidewalls extending outwards from said back plate;

wherein said back plate and said four side walls define an interior volume; and

wherein said back plate defines a plurality of openings;

a printed circuit board coupled to said external surface;

an image sensor mounted on said printed circuit board, said image sensor disposed such that the field of view of said image sensor faces said interior volume;

imaging optics coupled to said image sensor, said imaging optics at least partially disposed within said interior volume;

at least one illumination light emitting diode coupled to said printed circuit board wherein said at least one illumination light emitting diode is disposed within said interior volume;

at least one aiming light emitting diode coupled to said printed circuit board wherein said at least one aiming light emitting diode is disposed within said interior volume;

an aperture plate disposed proximate to said at least one illumination light emitting diode and said at least one aiming light emitting diode;

a diffuser plate coupled to said mounting frame, wherein said aperture plate is disposed between said aperture plate and said mounting frame, wherein said diffuser plate applies a clamping force to said aperture plate thereby holding said aperture plate in a predetermined position;

a control circuit for controlling the operation of said image sensor, said control circuit disposed on said printed circuit board, said control circuit coupled to said image sensor;

a signal processing circuit disposed to receive an electrical signal from said image sensor, said signal processing circuit mounted on said printed circuit board;

an image capture circuit adapted to receive the electrical signal from said signal processing circuit and store said electrical signal, said image capture circuit mounted on said printed circuit board; and

an image decoding and/or recognition circuit coupled to said image capture circuit, said image decoding and/or recognition circuit mounted on said printed circuit board;

wherein the receive axis of said image sensor is substantially perpendicular to said printed circuit board;

wherein said aperture plate defines at least one opening for allowing light generated by said at least one illumination light emitting diode to pass through; and

wherein said aperture plate defines at least one opening for allowing light generated by said at least one aiming light emitting diode to pass through.

36. (Previously Presented) An optical reader comprising:

a printed circuit board ("PCB") on which an integrated circuit ("IC") is mounted, the PCB further comprising printed circuit wiring for receiving electrical connections

from at least one component, the at least one component including a source of electrical power, the source of electrical power coupled to the IC;

an image sensor having a field of view, the image sensor adapted to generate an electrical signal representative of the field of view of the image sensor, the image sensor located within the IC;

an analog-to-digital ("A/D") converter, the A/D converter to digitize the electrical signal from the image sensor, the A/D converter electrically coupled to the image sensor and the A/D converter to convert the electrical signal from the image sensor to a digital signal, the A/D converter located within the IC;

a signal processing circuit electrically coupled to the A/D converter to receive the digital signal from the A/D converter, the signal processing circuit to process the digital signal from the A/D converter and to output a processed digital signal, the signal processing circuit located within the IC;

an image capture circuit including a memory, the image capture circuit electrically coupled to the signal processing circuit and adapted to receive the digital signal from the signal processing circuit and to store the processed digital signal in the memory, the image capture circuit located within the IC;

an image decoding and/or recognition circuit coupled to the IC, the image decoding and/or recognition circuit mounted on the PCB;

at least one light source mounted on the PCB, the at least one light source to illuminate at least a portion of the field of view of the image sensor; and

a control circuit coupled to the IC,

wherein the control circuit is adapted to control the operation of the image sensor in the IC.

37. (Previously Presented) The optical reader of claim 36, wherein the image decoding and/or recognition circuit is located within the IC on the PCB.

38. (Previously Presented) The optical reader of claim 36, wherein the control circuit is located within the IC on the PCB.

39. (Previously Presented) The optical reader of claim 1, wherein said optical reader has a plurality of light emitting diodes, each of said light emitting diodes being mounted on said printed circuit board which further has mounted therein said image sensor, wherein said optical reader is adapted so that light from said light emitting diodes is shaped to project first and second distinct patterns of light onto a target corresponding to said field of view, wherein said first pattern of light is delimited by top and bottom borders, and wherein said second pattern of light consists of a single horizontal line of light extending horizontally across an area delimited by said first pattern of light, said second pattern of light being spaced from both of said top and bottom borders and being devoid of vertically extending light pattern elements.

40. (Previously Presented) The optical reader of claim 10, wherein said optical reader has a plurality of light emitting diodes, each of said light emitting diodes being mounted on said printed circuit board which further has mounted therein said image sensor, wherein said optical reader is adapted so that light from said light emitting diodes is shaped to project first and second distinct patterns of light onto a target corresponding to said field of view, wherein said first pattern of light is delimited by top and bottom borders, and wherein said second pattern of light consists of a single horizontal line of light extending horizontally across an area delimited by said first pattern of light, said second pattern of light being spaced from both of said top and bottom borders and being devoid of vertically extending light pattern elements.

41. (Previously Presented) The optical reader of claim 1, wherein said optical reader further comprises a diffuser plate disposed to receive at least a portion of the light emitted from said at least one light source.

42. (Previously Presented) The optical reader of claim 1, wherein said at least one light source is provided by a plurality of light emitting diodes.

43. (Previously Presented) The optical reader of claim 1, wherein said image capture circuit and said image decoding and/or recognition circuit commonly mounted to said printed circuit board are integrated into a common IC.

44. (Previously Presented) The optical reader of claim 1, wherein said optical reader is adapted so that said optical reader projects both an aiming pattern and an illumination pattern onto a target corresponding to said field of view.

45. (Previously Presented) The optical reader of claim 1, wherein said optical reader is adapted so that said optical reader projects both an aiming pattern and an illumination pattern onto a target corresponding to said field of view, and wherein the aiming pattern comprises a horizontal line.

46. (Previously Presented) The optical reader of claim 1, wherein said at least one light source is an illumination light source.

47. (Previously Presented) The optical reader of claim 1, wherein said at least one light source includes at least one illumination light source and at least one aiming light source.

48. (Previously Presented) The optical reader of claim 1, wherein said optical reader includes an aiming assembly having a plurality of light sources, and wherein the plurality of light sources of said aiming assembly consist of two light emitting diodes.